



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:

OSB2000-0077-FEC

June 14, 2001

U.S. Fish & Wildlife Service
Attn: Mr. Ralph Webber,
Refuge Manager
Tualatin River National Wildlife Refuge
16340 SW Beef Bend Road
Sherwood, OR 97140

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential
Fish Habitat Consultation for the Morand Wetland Restoration Project, Tualatin River
Watershed, Washington County, Oregon

Dear Mr. Webber:

Enclosed is a biological opinion (Opinion) and incidental take statement prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) for the Morand Wetland Restoration Project. In this Opinion, NMFS concluded that the proposed action is not likely to jeopardize the continued existence of Upper Willamette River (UWR) chinook salmon and UWR steelhead, or destroy or adversely modify designated critical habitat. Pursuant to section 7 of the ESA, NMFS has included reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are necessary and appropriate to minimize the potential for incidental take of listed salmonids associated with the proposed action.

The enclosed Opinion also serves as consultation for chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*O. kisutch*) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR Part 600).

If you have any questions regarding this letter, please contact Jim Turner of my staff in the Oregon State Branch Office at (503) 231-6894.

Sincerely,

Donna Darm
Acting Regional Administrator

cc: Rich Gebheart, USCOE
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ENDANGERED SPECIES ACT - SECTION 7 FORMAL
CONSULTATION
&
MAGNUSON-STEVENSON ACT
ESSENTIAL FISH HABITAT CONSULTATION

Tualatin National Wildlife Refuge
Morand Wetland Restoration Project
Tualatin River Watershed
Washington County, Oregon

Lead Action Agency: U.S. Fish & Wildlife Service

Consultation Conducted by: National Marine Fisheries Service
Northwest Region

Date Issued: June 14, 2001

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1. ENDANGERED SPECIES ACT

1.1 Background

In a letter dated January 9, 2001, the Tualatin River National Wildlife Refuge (TRNWR), a management unit of the National Wildlife Refuge System, requested that National Marine Fisheries Service (NMFS) conduct formal consultation for the proposed Morand Restoration Project under section 7(a)(2) of the Endangered Species Act (ESA). The proposed project involves the construction of floodplain embankments and a gated instream water control structure to restore a historic wetland along the Tualatin River west of the City of Tualatin in Washington County, Oregon.

Informal consultation was initiated on this project in February of 2000. The TRNWR determined that the Upper Willamette River steelhead and Upper Willamette River chinook salmon, listed as threatened under the ESA, may occur within the project area and that these species may be affected by the proposed project. TRNWR also determined that the project site was subject to annual flooding and could potentially entrap fish. Discussions were held to determine if alternative approaches or designs could be employed to meet the TRNWR needs and reduce the likelihood that listed fish would be entrapped. The TRNWR indicated that the water control structure was the best option that would allow them to control water elevations over time to meet their desired outcome.

In the January 9, 2001 letter, the TRNWR indicated that the proposed actions may affect and would likely adversely affect Upper Willamette River steelhead and Upper Willamette River chinook salmon and their critical habitat and requested formal consultation.

The objective of this Opinion is to determine whether the action to restore a seasonally-flooded wetland is likely to jeopardize the continued existence of Upper Willamette River chinook salmon or Upper Willamette River steelhead or destroy or adversely modify their critical habitat.

1.2 Proposed Action

The U.S. Fish and Wildlife Service is currently acquiring and managing lands as part of the TRNWR. Among the refuge goals are the protection and restoration of floodplain functions and habitat along the Tualatin River in support of species listed under the ESA. To this end, the refuge will be developing a comprehensive plan that will guide the development and management of refuge projects and actions. Until the refuge plan is complete, the TRNWR will be undertaking certain actions determined to be consistent with the refuge goals.

The TRNWR has evaluated the potential for the Morand Restoration Project site and determined that its location in the floodplain, its physical character, soil conditions, and historic vegetation indicated seasonal flooding. The Morand site has been altered over many years due to farming practices. According to the TRNWR assessment, prior to human settlement the site was wet prairie with mixed

riparian forest and seasonal wetlands. There are drainage tiles that drain subsurface waters to the north into the Tualatin River and an excavated drainage channel, located along the southern and eastern edge of the project site to facilitate surface and subsurface drainage. To restore seasonal flooding, TRNWR will remove or disable this drainage system.

The TRNWR intends to restore natural habitat to the Morand site. This will include six acres of seasonal wetland; 13 acres of wet meadow prairie, and 3.5 acres of riparian forest. The seasonal water levels will be managed to emulate the historic conditions. This will be accomplished by removing or displacing drainage tiles, constructing an embankment across the existing drainage channel, and incorporating the water control structure to manage water elevations to retain storm water runoff. The TRNWR has determined that the use of a gated water control structure is essential to meet their goals and allow for refuge management.

The subsurface and surface drainage features will be altered in an attempt to restore wetland conditions. The drainage tiles will be removed or crushed using an excavator or other heavy equipment. An earthen embankment, six feet high by 120 feet long, will be constructed across the current drainage channel using 600 cubic yards of fill from the local area. The borrow area of approximately 200 by 200 feet will be excavated to maintain surface gradient and minimize potential localized ponding when flood waters recede and the backwater pond is completely emptied in late spring. Heavy equipment will be used to excavate and place fill material to construct the embankment. The embankment will be covered with erosion protection material and rock riprap on the downstream face. The impacts from this work will be minimized by limiting the number of trees removed, incorporating erosion protection measures to contain fine sediment on site, and vegetating the embankment with native plants. A water control structure will be incorporated into the embankment. This water control structure will include two gates. A weir gate has been designed with a V-notch to concentrate low water outflows and facilitate fish movement over the gate and back to the Tualatin River. The second gate will provide for complete draining during the final stages of the draw down of the water impoundment.

The TRNWR intends to manage the Morand site for native plant diversity. The wet prairie and forested habitat areas will be prepared and planted with native vegetation. This may entail tilling the land, removing non-native species and seeding or planting of native vegetation. In the short term, the herbicide Rodeo may be applied at locations within the area to be restored as wet prairie¹. This area is adjacent to the area that will be seasonally-flooded. The herbicide will be applied using a boom sprayer. In the long term, mechanical methods will be incorporated to maintain the wet prairie. Active

¹ Recently NMFS has become increasingly concerned about sub-lethal effects to salmonids resulting from the application of various pesticides. The NMFS is currently developing the science necessary to address this issue. However, since the science is currently unavailable at this time, caution must be exercised in approval of pesticide application. In the interest of not delaying this project, NMFS is not considering the use of pesticides in this Opinion and recommends that TRNWR enter into a separate consultation with NMFS on the use of pesticides on the refuge.

management of the water elevation is intended to control non-native plants by maintaining wet conditions less tolerated by reed canary grass or other plants.

The TRNWR intends to manage the water impoundment to retain water from October through May and accommodate fish passage out of the impoundment to the Tualatin River in the event of river flooding that overtops the structure and inundates the area. The target operating level of the water impoundment, 113.5 feet MSL, will be managed and subject to variable water input, flooding from Tualatin River and water temperature. Seasonal variations in precipitation may delay initial filling or accelerate lowering the reservoir in spring. When the operating level of the water impoundment is reached, overflow from surface water and spring water input will maintain flows through the pond. When the Tualatin River overtops the floodplain levees or constructed embankment and water control structure, the weir gate will be lowered along with the receding flood waters. This will provide for sufficient flows and water depths over the overshot gate and through the structure to facilitate fish escapement from the project site. After dewatering of the impoundment, the weir gate will be raised to capture surface water runoff and spring water consistent with overall water management plans. When water temperatures in the impoundment approach 60 degrees F, the TRNWR will complete another draw down.

The TRNWR will monitor the resulting habitat restoration and water impoundment to ensure desired results and adapt management actions as necessary, including a program to evaluate and track direct effects on listed fish. This includes monitoring whether listed salmon or steelhead are present after flooding occurs and, if so, whether they will escape or become stranded during draw down.

1.3 Biological Information and Critical Habitat

Based on migratory timing, NMFS expects that few, if any, listed salmon or steelhead will be present during the proposed in-water work period. The proposed action would occur within designated critical habitat.

The biological status of Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) was reviewed by Myers et al. (1998) and the status of UWR steelhead (*O. mykiss*) was reviewed by Busby et al. (1995) and Busby et al. (1996). UWR chinook salmon was listed as threatened on March 24, 1999 (64 FR 14308) and critical habitat was designated on February 16, 2000 (65 FR 7764). UWR steelhead was listed as threatened on March 25, 1999 (64 FR 14517) and critical habitat was designated on February 16, 2000 (65 FR 7764). Protective regulations for both species were issued on July 10, 2000 (65 FR 42422).

The action area is defined by NMFS regulations (50 CFR 402) as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action”. The action area includes designated critical habitat affected by the proposed action within the immediate site and adjacent reach of the Tualatin River. This area serves as a migratory corridor for both adult and

juvenile life stages of Upper Willamette River steelhead and Upper Willamette River chinook salmon. Essential features of the adult and juvenile migratory corridor for the species are: (1) Substrate; (2) water quality; (3) water quantity; (4) water temperature; (5) water velocity; (6) cover/shelter; (7) food (juvenile only); (8) riparian vegetation; (9) space; and (10) safe passage conditions (50 CFR 226). The essential features this proposed project may affect are water quality, as a result of construction activities, and safe passage conditions, as a result possible entrapment of indicated listed outmigrating juvenile fish.

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of: (1) Defining the biological requirements of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential feature of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

1.4.1 Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also

considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the subject species to survive and recover to a naturally reproducing population level at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the indicated fish species, based upon their risk of extinction, has not significantly improved since the species were listed.

1.4.2 Environmental Baseline

The biological requirements of the indicated fish species are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in the environmental conditions they experience over those currently available under the environmental baseline. Any further degradation of these conditions would have a significant impact due to the amount of risk they presently face under the environmental baseline.

The action area is defined as the area that is directly and indirectly affected by the proposed action. The direct effects occur at the project site and may extend upstream or downstream, based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. For the purposes of this Opinion, the action area is defined as the riparian area, streambank and channel of the Tualatin River extending upstream to the edge of disturbance and downstream 100 feet. Other areas of the Tualatin River watershed are not expected to be directly or indirectly affected.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Actions

The NMFS expects that the effects of the proposed project will maintain or improve the riparian floodplain habitat and functions at this site in the long term, yet recognizes that there will be some potential adverse effects during the short term, and from periodic vegetative management and operation of the water control structure. The three aspects of this project that will affect listed fish (summarized

and described in greater detail below) include construction, habitat management, and operation of the water control structure. Construction activities will involve excavation and filling within the current drainage channel and result in the exposure of bare ground. This will increase the source of fine sediments susceptible to surface erosion and potential discharge into the Tualatin River. Proposed conservation measures including timing of construction and application of erosion protection techniques will be applied to manage and retain sediment on-site.

Habitat management will include periodic cultivation and manipulation of the open prairie vegetation and habitat. Although the application of chemical herbicides would be expected during this routine management, herbicide use is not being evaluated under this Opinion for reasons indicated above. Habitat management may result in the exposure of bare ground and/or removal of vegetation cover. This will increase the source of fine sediments to potential erosion and discharge to the Tualatin River. Revegetation is expected to be rapid and occur before the rainy period of the year, during which time surface water and suspended sediments would be contained behind the water control structure.

The operation of the water control structure will affect the frequency of river flooding and the extent and duration water is held on the project site. Floodplain access by UWR steelhead and UWR chinook salmon will be managed at the water control structure to minimize entrapment of juveniles while providing opportunity to obtain food and refuge. Over the long term, the floodplain riparian habitat will become more diverse physically and biologically. Flooded conditions will encourage variation in native vegetation and provide improved habitat for fish and wildlife. Surface water and various pollutants from off site will be controlled and may improve water quality discharged into the Tualatin River.

1.5.1.1 Construction and Modification of Drainage Features

The proposed action will involve the construction of an earthen embankment and water control structure and the removal or blockage of subsurface drainage tiles. Shallow excavation will occur in the immediate vicinity of the water control structure to obtain fill material. The surface character and gentle slope of the land at the borrow site will be maintained. Fill will be placed to block a ditched drainage swale and provide the base for the water control structure. Subsurface drainage tiles will be excavated and crushed. This activity will involve the use of heavy equipment and result in the exposure of approximately one acre of bare ground and displacement of a tenth of an acre of riparian area with the potential for surface erosion of fine sediment.

Increased turbidity and suspended sediments can affect fish migration, rearing, and spawning. Chronic high levels of turbidity and suspended sediments can act to absorb heat from the sun and increase water temperatures. Because the project is located in the lower end of the watershed with no known spawning activity, potential effects to spawning are not considered likely. The expected levels of turbidity and suspended sediments should be limited to a short period of time during, and just after, construction with the first significant rains of the fall.

Effects from turbidity and suspended sediments to migration and rearing will depend on concentration of suspended sediment resulting from the project and the likelihood that fish would be present and encounter these sediments. Fine sediments can affect salmonid migration and behavior, and in high enough concentrations can be fatal. The disturbance of the ground and removal of some riparian vegetation will expose more fine sediments to wind and rain events that can transport these sediments to the Tualatin River. The work will be done during the dry period of the year when storms are less frequent and generally less intense. The ground is fairly flat and surface water flows would remain of low velocity, further reducing the potential for suspending and transporting fine sediments. Conservation measures to contain sediments on-site include the use of silt fences and other drainage system barriers. The exposed ground will also be covered with erosion protection material and/or replanted after excavation. After the construction is complete, and during the initial significant rains, those fine sediments that become suspended will likely be retained behind the water control structure in the water impoundment. Work during the summer period will also tend to reduce potential exposure of UWR steelhead and UWR chinook salmon to increased turbidity and suspended sediments. UWR steelhead and UWR chinook salmon are less likely to be present when water temperatures rise into the high 60 degrees F. Summer water temperatures in the Tualatin River are above 60 degrees F on a continual and regular basis. Over time those areas disturbed during construction will become revegetated and provide additional cover and bind the soil and fine sediments.

1.5.1.2 Vegetative Management

The use of various management and cultivation practices, including application of herbicides (not evaluated or covered under this Opinion), burning, haying, tilling, seeding and planting, may result in exposure and discharges of fine sediments into the water. This will result in periodic disturbances to soils and vegetation and will expose soils and fine sediments to potential erosion. The area of disturbance will be approximately 13 acres and will be done during the dry period of the year. New growth of vegetation cover is expected before substantial rain in the fall and the water impoundment would be expected to contain much of the fine sediments on-site.

The potential to transport sediments to the Tualatin River and affect listed fish is similar to that for construction activities. Fine sediments and turbidity can affect salmonid migration and behavior, and in high enough concentrations can be fatal. Active vegetation management will be set back from drainage channels, streams and wetlands a minimum of 50 feet, and likely 200 feet in many areas. The work will occur during the dry season when fine sediment discharge from the site is not likely. It is expected that habitat diversity and vegetation characteristics for this riparian floodplain will emulate historic conditions.

1.5.1.3 Operation of Water Control Structure (Non-River Flood Event)

Operation of the water control structure before and after a Tualatin River flooding event that overtops the structure and natural levees will result in impoundment of surface and spring water during the fall,

winter and spring. Flow off the project site into the Tualatin River will be initially limited until the target operating level has been reached. Then, water output over the weir gate will be equal to input from surface and spring flows.

The resulting seasonally-flooded wetland will affect water quality entering the Tualatin River. Wetlands can improve water quality by filtering suspended sediments and allowing biological removal of nutrients from surface waters. Surface water entering the project site comes from adjacent agricultural and rural residential areas. These waters may contain various pollutants that can be physically or biologically filtered through the seasonally flooded wetlands. Wetlands and shallow water impoundments can absorb solar energy and result in an increase in water temperature. Actual temperature gain will depend on number of factors including the temperature of water collected in the impoundment, the amount of shade around the impoundment, and the time of year that the water is impounded. Water temperature above 64 degrees F can adversely affect listed fish. This temperature is regularly exceeded in the Tualatin River during the summer period. Water discharged during the spring has less likelihood of exceeding water temperature standards or contributing to the increase water temperature in the Tualatin River system. The TRNWR intends to monitor impounded water temperature and will draw down the impoundment prior to temperatures exceed 64 degrees F. It is expected that the quality of the waters discharged into the Tualatin River will be improved.

The resulting seasonally-flooded wetland will also affect seasonal flows within the Tualatin River. The water control structure will initially retain all surface and spring water beginning in the fall, will pass normal discharges through the system during the rest of the operational season, and discharge the held water in the spring. This flow regime shifts water discharge from the fall towards the spring period. Alterations of seasonal flow patterns within rivers can affect the timing of migration of juvenile UWR steelhead and UWR chinook salmon by limiting access to habitat. Flows can also affect habitat character by modifying hydrology, which may result in a hydraulic response and localized changes to bed and bank character. Due to the low amount of water that comes off of the project site, and compared to the flows within the Tualatin River, this effect is not expected to be measurable. In addition, the proposed action is intended to mimic a historic condition that would have more effectively retained and slowly released surface water discharges. It is expected that impacts to the flow characteristics within the Tualatin River will be minimal.

1.5.1.4 Operation of Water Control Structure (River Flood Event)

The placement and operation of the water control structure will affect the floodplain functions during a Tualatin River flood event. Compared to current conditions, the proposed action will restrict rising flood waters from inundating the lower portion of the project site. Previous land uses on the project site have altered the drainage characteristics. This has included regular excavation of a drainage channel, effectively opening the downstream end of project site to the Tualatin River. Because of this condition, current floods in the Tualatin River will inundate the project site. With the proposed action, the rising flood waters will be limited by the earthen embankment and water control structure until that structure is

over topped, a difference of about three feet of elevation. Compared to current conditions, there will be a change in floodplain function due to increased water detention during small flood events and during the initial flood stages of larger flood events. The overall change of function would depend in the frequency and height of flooding events.

Current habitat conditions at the action area would be not expected to exist without continual ditching and active manipulation of the drainage features on the land. The TRNWR has indicated that the previous agricultural activities on this site resulted in the excavation and lowering of the natural levee, and that the proposed action would restore the natural levee and historic conditions. Considering river flooding, and surface and subsurface drainage from the project site, and looking at the current topography, it would be reasonable to speculate that the current drainage channel was not a distinct feature, that a lowland swale existed, and flooding and back-watering from the Tualatin River would have created a natural levee containing much of the proposed seasonally-flooded wetlands on the project site. The extent to which the proposed action would simulate this natural feature is not known. The soils and historic vegetation data indicate substantial periods of inundation on the project site. The TRNWR has designed the proposed water control structure to result in a similar flooding pattern. To the extent the proposed action would achieve a natural flooding condition, the effects of the project on flooding patterns in the long term have been lessened.

The changes to the flooding patterns, including the extent and timing of floodplain inundation, will affect habitat access for the listed fish. These fish benefit from access to side channels, seasonal alcoves/wetland swales, and floodplains during high water and flooding events. These fish find refuge from high water velocities, protection from predation, and food. Within the Tualatin River system, these high water habitats have been substantially altered or eliminated. Agriculture practices, such as at the Morand site, and major flood control projects and water use upstream have filled in or isolated these habitats from the river. During rising flood waters, the Tualatin River would be expected to inundate the project site. The extent of inundation of the floodplain will be limited by the water control embankment until the structure is over topped. In the short term, compared to current conditions, the proposed operation of the water control structure will restrict floodplain habitat access by the fish. In the long term, compared to a restored natural and sustainable condition, the difference in the extent of floodplain habitat that would be accessible by these fish has been reduced.

In addition to habitat access during a rising flood, the listed fish must have an opportunity to return to the Tualatin River with receding floods. Once the rising floods have over topped and inundated the project site, the listed fish can travel over the embankment and enter the project area. As the flood waters recede, the water control structure will be operated to facilitate passage out of the flood project area to the Tualatin River. During receding flood waters, the weir gate of the water control structure will be lowered, maintaining a continual connection and outflow. The discharge of flood water from the water the impoundment will allow the indicated listed fish to orient downstream and out of water impoundment as the water drains towards the river. Complete draw down of the site will ensure fish return to the Tualatin River system.

1.5.1.5 Monitoring Adaptive Management

The TRNWR will monitor the project area after flooding for the presence of UWR steelhead and UWR chinook salmon and fish passage at the weir. The monitoring will include observation of temperature, water levels in the river and water impoundment, and sampling for fish in the water impoundment and at the water control structure. These activities may result in capture and release of UWR steelhead and UWR chinook salmon. The sampling intensity and numbers of UWR steelhead and UWR chinook salmon encountered is expected to be low.

1.5.2 Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat has been designated for the UWR steelhead and UWR chinook salmon. For the proposed action, NMFS expects that the effects will tend to maintain or restore properly functioning habitat conditions in the watershed related to water quality, off channel habitat, floodplain connectivity, and flow. This is expected to improve the quality of critical habitat in the Tualatin River basin.

1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the action area is defined in Section 1.4.2. A wide variety of actions occur in the Tualatin River basin within which the action area is located. These activities have the potential to impact fish and habitat within the action area. Continued urban development and on-going agricultural practices including water diversions will affect the water quality and hydrology. A continuing trend of high summer temperatures, higher discharges of flows immediately following storm events, and lack of habitat structure in the Tualatin River to dissipate energy is expected. Future Federal actions, including the ongoing operation of the Tualatin River flood control system, hatcheries, fisheries, and land management activities will be reviewed through separate section 7 consultation processes.

NMFS is not aware of any other significant change in non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

1.6 Conclusion

NMFS has determined, based on the available information, that the proposed action is expected to maintain or restore properly functioning habitat conditions within the action area. Consequently, the

proposed action covered in this Opinion is not likely to jeopardize the continued existence of the listed salmon and steelhead species or destroy or adversely modify designated critical habitat. NMFS used the best available scientific and commercial data to apply its jeopardy analysis, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS believes that the proposed action would cause a minor, short-term degradation of anadromous salmonid habitat due to sediment impacts and in-water construction. The long-term effect will maintain habitat diversity and function in the floodplain and riparian areas. Direct mortality from this project could occur during the in-water work but is unlikely to occur at a measurable level.

1.7 Reinitiation of Consultation

Reinitiation of consultation is required: (1) If the action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this biological opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1 Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion has more than a negligible likelihood of resulting in incidental take of the listed UWR chinook salmon and UWR steelhead species because of short-term detrimental effects from increased sediment levels (non-lethal), the potential for direct incidental take from entrapment in the water impoundment after flood events (lethal and non-lethal) and the potential for direct incidental take from monitoring (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species themselves. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information in the BA, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Opinion. The extent of the take is limited to the action area.

2.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of listed fish resulting from implementation of this Opinion. These reasonable and prudent measures would also minimize adverse effects to designated critical habitat.

The TRNWR shall:

1. Minimize the likelihood of incidental take from construction practices by timing the completion of all in-water work as necessary to avoid harming vulnerable salmon life stages, including spawning, migration and rearing.
2. Minimize the likelihood of incidental take from the use of heavy equipment by following best management practices for heavy equipment use.
3. Minimize the likelihood of incidental take from non-point source pollution by following best management practices to prevent erosion and ensuring timely site restoration.
4. Carry out a comprehensive monitoring and reporting program to document the level of listed salmon take from permitted activities.

2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the TRNWR must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure #1 (in-water work timing) above, the TRNWR shall ensure that:
 - a. All work within the active channel that could potentially contribute sediment or toxicants to downstream fish-bearing systems will be completed within the ODFW approved in-water work period.
 - b. Extensions of the in-water work period, including those for work outside the wetted perimeter of the stream but below the ordinary high water mark must be approved by biologists from NMFS.
2. To implement Reasonable and Prudent Measure #2 (heavy equipment) above, the TRNWR shall ensure that heavy equipment use will be restricted as follows:
 - a. When heavy equipment is required, the applicant will use equipment having the least impact (e.g., minimally sized, rubber tired).
 - b. Construction impacts will be confined to the minimum area necessary to complete the project.
 - c. Construction of the embankment and outlet structure will be done in the dry or outside of the actively flowing stream as much as possible.
 - d. Heavy equipment will be fueled, maintained and stored as follows:
 - i. All equipment that is used for instream work will be cleaned prior to operations below the bankfull elevation. External oil and grease will be removed, along with dirt and mud. No untreated wash and rinse water will be discharged into streams and rivers without adequate treatment.
 - ii. Place vehicle staging, maintenance, refueling, and fuel storage areas a minimum of 150 feet horizontal distance from any stream.
 - iii. All vehicles operated within 150 feet of any stream or water body will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.
 - iv. When not in use, vehicles will be stored in the vehicle staging area.

3. To implement Reasonable and Prudent Measure #3 (non-point source pollution and site restoration) above, the TRNWR shall ensure that:
 - a. An erosion control plan is developed that contains the following elements and meets requirements of all applicable laws and regulations.
 - i. Methods will be used to prevent erosion and sedimentation associated with the following features, to the extent they will be part of this project: Access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
 - ii. Methods will be used to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including washout facilities.
 - iii. Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.
 - b. Site restoration and clean-up, including protection of bare earth by seeding, planting, mulching and fertilizing, shall be done in the following manner:
 - i. All exposed soil surfaces, including construction access roads and associated staging areas, will be stabilized at finished grade with mulch, native herbaceous seeding, and native woody vegetation prior to October 1.
 - ii. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is located, and will comprise a diverse assemblage of woody and herbaceous species.
4. To implement Reasonable and Prudent Measure #4 (monitoring and reporting), above, the TRNWR shall ensure that:
 - a. Within 30 days of completing the project, the TRNWR will submit a monitoring report to NMFS describing the TRNWR's success meeting these terms and conditions. This report will consist of the following information.
 - i. Project identification.
 - (1) Project name;
 - (2) starting and ending dates of work completed for this project; and
 - (3) the name and address of the construction supervisor.
 - ii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

- iii. Site restoration. Documentation of the following conditions:
 - (1) Finished grade slopes and elevations.
 - (2) Planting composition and density.
 - (3) A plan to inspect and, if necessary, replace failed plantings and structures for five years.
 - iv. A narrative assessment of the project's effects on natural stream function.
 - v. Photographic documentation of environmental conditions at the project site before, during and after project completion.
 - (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
 - (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
 - (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.
- b. Water control structure operations. By December 31, 2001, and each year thereafter until 2006, the TRNWR will submit a monitoring report describing operations of the water control structure and effects on ESA-listed fish. The report will include the following information:
- i. The name and address of the water control operations supervisor;
 - ii. a record of weir manipulations and their effects on the water impoundment;
 - iii. methods used to monitor ESA-listed fish presence within the project area and their passage through the weirs;
 - iv. any incidence of observed stranding, injury or mortality to an ESA-listed salmonid; and
 - v. recommendations to reduce identifiable adverse impacts and increase the restoration benefits of water control operations for ESA-listed species.
- c. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the National Marine Fishery Service Law Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; telephone: 360/418-4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder

has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

- d. Monitoring reports will be submitted to:

National Marine Fisheries Service
Oregon State Branch Office, Habitat Division
Attn: OSB2001-0077-FEC
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

3. ESSENTIAL FISH HABITAT

3.1 Background

The objective of the Essential Fish Habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for chinook and coho salmon, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA [6 USC 1855(b)] requires that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NMFS shall provide conservation recommendations for any Federal or State Activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reason for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*)(PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed action is detailed above in the ESA portion of this consultation. The action area includes the Morand Wetland Restoration Site and adjacent stream and riparian areas. This area has been designated as EFH for various life stages of chinook salmon.

3.5 Effects of Proposed Action

As described in detail in the ESA portion of this consultation, the proposed activities may result in detrimental, short-term, adverse effects to a variety of habitat parameters.

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for Pacific salmon.

3.7 EFH Conservation Recommendations

Pursuant to Section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. In addition to conservation measures proposed for the project by the TRNWR, all of the Reasonable and Prudent Measures and the Terms and Conditions contained in the ESA portion of this consultation are applicable to salmon EFH. Therefore, NMFS incorporates each of those measures here as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the TRNWR to provide a written response to NMFS' EFH conservation recommendations within 30 days of its receipt of this letter. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. If the response is inconsistent with NMFS' conservation recommendations, the reasons for not implementing the TRNWR shall explain its reasons for not following the recommendations.

3.9 Consultation Renewal

The TRNWR must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

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